MALYSHEV, K. A.; TRUBIN, I. B.

The Effect of the Rate of Heating of Preliminary Heat-Treatment on the
Kinetics of the Growth of Austenite Grain in Carbon Steel.

Trudy UFAN 10, 215, 1941

Kinetics of the growth of austenite grains in cast and forged steel containing additions of aluminum, vanadium and titanium. K. A. Malyshev. *Metallurg* 14, 36-47 (June, 1939); *Met. Abstracts* (in *Metals & Alloys* 10, 590; cf. C. A. 33, 4082¹.—The kinetics of the growth of austenite grains was investigated at a heating speed of 160-80°/hr. Each heat was characterized by a certain period of stability of the fine-grained austenite system (incubation period of grain growth at a given temp.) above the crit. range. The period of austenite grain growth, which starts after the incubation period, produces nonuniformity of grain size. Small addns. of Al, V and Ti prolong the incubation period and raise the temp. of initial austenite grain growth by 100-150° in comparison with ordinary steel. Cast steel showed the greatest stability of fine austenite grains. Energetic forging reduces the incubation period and lowers the temp. of initial grain growth by 50-100° in comparison with cast steel. Addn. of 0.05% and 0.1% Al enabled retention of fine grain up to 950-1000°. Addn. of 0.1% Ti maintained fine grain up to 1000-1050° in the cast condition, but after forging the stability of the fine-grain condition did not differ from ordinary steel. Steel contg. 0.23% V differed from all the others in that this addn. permitted retention of fine grain even under the influence of forging and heat-treatment; the fine-grain condition was retained up to 900-50° and no noticeable differences in grain size were observed up to 1200°. Preliminary heat-treatment greatly affected the stability of the fine-grained austenite. Repeated heatings in the interval 850-1000° decreased the stability of the fine-grained austenite in both ordinary and on Al-contg. steels, but preliminary high overheating (1100-1200°) increased the stability of fine-grained austenite in the Al-contg. steels.

C. L. B.

New method of graphic representation of the growth of austenite grain in (carbon) steel. K. A. Malyshev. Zavodskaya Lab. 7, 1261-3(1938); cf. C. A. 32, 4409. As was shown in the earlier paper, the grain structure within the thermal range of 900-1100° forms aggregates of fine and coarse crystals. Hence, the kinetics of the grain growth in relation to the temp. and duration of heating cannot be expressed by a single curve of the mean grain size. It can be represented by a summation graph of at least 3 values, such as the mean size of small grains and that of large grains and their percentage relation. Photomicrographs.

Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MALYSHEV, K. A.

"The Effect of Aluminum-Reduction on the Sensitivity to Overheating, on
Structure and the Mechanical Properties of Steel"

Trudy UFAN 9, 173, 1937

The shrinkage of phenol-aldehyde plastics   K. Maly-
shev. Org. Chem. Ind. (U.S.S.R.) 3, 507(1937); Chimie
& industrie 39, 957. The decrease in the size of such ar-
ticles is due partly to thermal causes and partly to con-
traction proper, the former being reversible and the latter
irreversible. Shrinkage also varies with temp., being
higher at high temps. Its value is not the same in all di-
rections of the mold.   A. Papineau-Couture

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

investigated after each stage in the thermal treatment. The addition of aluminium retards the growth of the austenite grain below 1000°, but accelerates it above 1000°. In the interval 950-1050° steel deoxidised with aluminium shows a very heterogeneous grain. The second heating (to 800°) has no effect on the grain size of non-deoxidised steel, but breaks up the grain of the deoxidised steel (in the samples in which large grains were grown by heating above 1000°). In the small-grained aluminium-treated steel (i.e., steel heated below 1000°) a second heating causes a partial growth of the grains, giving a mixed structure. In slowly-cooled samples de-oxidised steel shows a tendency to assume a globular structure, whereas the non-deoxidised steel gives a network structure. The pearlite assumes the form of grains in the first case and a lamellar form in the second one. The impact resistance of the longitudinal samples of aluminium steel—even of those with larger grains—is higher than that of the non-deoxidised steel. High-temperature annealing (1150-1250°) followed by an ordinary annealing improves the toughness of deoxidised steel. On the whole, the influence of aluminium is remarkably strong. A decision between the two theories of this influence (submicroscopic inclusions of alumina or solution of aluminium in the austenite) cannot yet be arrived at. (In Russian).

SHTEYNBERG, S. S.

Influence of Deoxidation by Aluminium on the Sensitivity of Carbon Steel to Overheat; and on its Mechanical Properties. K. A. Malyshev and S. S. Shteinberg. (Katshestvennaia Stal, 1937, No. 2, pp. 11-17). The authors compare three ingots of soft steel (0·35% carbon). To one no aluminium was added before casting; one was deoxidised with 0·03% of aluminium and one with 0·05% of aluminium. Samples of the three steels were heated to different temperatures (800 1250°) and either slowly cooled or quenched, then heated for a second time to 800° and again either quenched or slowly cooled. The microstructures and mechanical properties were

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MALYSHEV, K. A.

Sensitivity of Steel to Overheating. Ural Metallurgy No 6, 27, 1936.

The separation of graphite in the crystallization of cast iron. S. S. STEINBERG, AND K. A. MALYSHEV. *Metallurg* (U. S. S. R.) 6, 123-9(1931); *Chem. Zentr.* 1931, II, 1479.—The sepn. of the graphite was investigated in relation to the raw material (white or gray metal), the superheating of the iron, the duration of such heating and the velocity of cooling. Graphite seps. from liquid cast iron in 3 forms: (1) a graphite eutectic consisting of very fine graphite laminae (0.01 mm.), (2) larger leaves (0.1 mm.) and (3) large aggregations and nests. Superheating the iron to 1600° and keeping it in the liquid condition a long time decreases the amt. of graphite sepg. and favors the formation of the fine graphite eutectic. Slow cooling during the period of crystn. increases the amt. of graphite sepg. and favors the formation of the coarser formations. After remelting, the gray metal yields more graphite than the white. M. G. Moore

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

MALYSHEV, K.

Progressive collectives of hydrographers. Mor. flot. 24
(MIRA 18:12)
no.5:5-6 My '64.

1. Nachal'nik planovo-proizvodstvennogo otdela Gidrograficheskogo
predpriyatiya Ministerstva morskogo flota.

MALYSHEV, Igor' Vasil'yevich; BASKIN, M.P., prof., otv.red.; KOVTUN, Yu.Ye., red.izd-va; VOLKOVA, V.V., tekhn.red.

[Role of the masses in the Soviet socialist society] O roli narodnykh mass v sovetskom sotsialisticheskom obshchestve. Moskva, Izd-vo Akad.nauk SSSR, 1960. 156 p.

(Labor and laboring classes)   (MIRA 14:2)

MALYSHEV, I.V.; POPOV, Yu.B.; ROZOV, B.S.

Logarithmic pulse amplifier. Prib. i tekh. eksp. 10 no.1:114-116 Ja-F '65.
(MIRA 18:7)

YEREMIN, A.S.; MALYSHEV, I.V.; ROZOV, B.S.

Stabilization of the initial current in a logarithmic diode. Prib.
i tekh. eksp. 9 no.1;208-209 Ja-F '64.   (MIRA 17:4)

1. Moskovskiy inzhenerno-fizicheskiy institut.

L 30338-66

ACC NR: AP6019581

a greater tolerance in coil positioning can be had in quadrant I; also, a pronounced
dead zone appears between quadrants I and IV. A similar family of curves was ob-
tained for motion of the coil across the envelope, i.e., in the X-X direction of
Fig. 2. From their data the authors have derived empirical design formulas for
optimum coil positioning. They conclude that the cross-field design is practical
and can be realized without unreasonable demands on geometry tolerances. Operating
specifications of the tested relays are included. Orig. art. has: 3 figures and
6 formulas. [SH]

SUB CODE: 09/ SUBM DATE none/ ORIG REF: 002/ OTH REF: 001/ ATD PRESS:5// 6

Card 3/3

L 30338-66

ACC NR: AP6019581

N-47-D5 alloy. The actuator coil consisted of 1000 turns of 0.35-mm wire wound on a 39 x 4 x 4-mm Ni-Fe core and fed from a 6—12-v d-c source. The main objective of the tests was to find the operating characteristic of the relay as a function of actuator-coil position, when the coil was moved both laterally along the relay envelope and perpendicularly across it. A sample of the curves is given in Fig. 2,
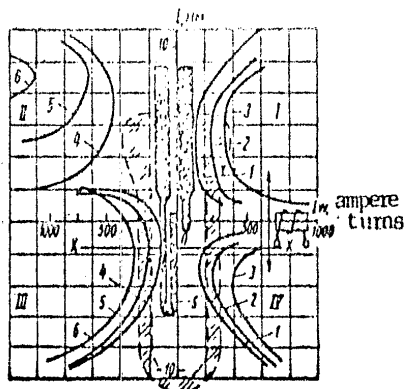

Fig. 2. Threshold operating characteristics

where the graph overlays a cross-section of the relay. The curves represent the threshold ampere-turns required for contact operation at varying distances of the coil from the reed contacts. The graph shows, for example, that maximum sensitivity occurs when the coil is in quadrant III, i.e., nearest to the movable reed, but that

Card   2/3

.L 30338-66   FWT(1)

ACC NR: AP6019581   SOURCE CODE: UR/0115/66/000/004/0060/0063

AUTHOR: Dikovskiy, Ya. M.; Malyshev, I. S.; Pinchuk, L. Ye.

ORG: none

TITLE: Operating characteristics of magnetic reed relays in a transverse magnetic field

SOURCE: Izmeritel'naya tekhnika, no. 4, 1966, 60-63

TOPIC TAGS: electric relay, ferrite switch

ABSTRACT: The authors describe experimental results obtained with magnetic reed relays, in which the controlling magnetic field is normal rather than parallel to the contact arms. Tests were done on two batches of ten relays each, all having the same form as in Fig. 1, except that one batch had 1.0-mm-diameter reeds while the other had 0.8-mm reeds. Reeds were of a magnetic material identified only as type

Fig. 1. Reed relay

Card   1/3

BALYSHEV, Ivan Stepanovich, kand. ekon. nauk; GLYAZER, L.S.; [...], S.S., m.sd. red.

[Economics and administrative practice (Ekonomicheska nauka i khoziaistvennia praktika. Moskva, Ekonomika, 1964. 95 p. (Glavneishaa problemy sovershenstvovanila [...] nirovanila, no.8)

MAGORSKIY, I.S.; MALYSHEV, I.S.

Moisture of peat excavated in bogs. Trudy Inst.
SSR 9:43-48 '6..

(Peat bogs)

MALYSHEV, I.S.

[National income of the U.S.S.R.] Natsional'nyi dokhod SSSR. Moskva, Izd-vo "Znanie," 1953. 39 p.

(MLRA 6:10)
(Income)

28972
S/179/61/000/003/0.5/016
E031/E435

The axisymmetric antimodel ...

assumed that the Joule heat in the equation of conservation of
energy can be neglected and that there is no discontinuity in the
magnetic field across the shock wave. It is found that as
$k = \sigma J^2/4\pi^2$ (where σ is the conductivity) increases, the wave drag
grows. There are 6 figures and 4 references: 3 Soviet and
1 non-Soviet. The reference to an English language publication
reads as follows: Fsion H. J.Math. Phys. 1946, XXV, 3.

SUBMITTED: December 10, 1960

Card 2/2

// 10.2000

28972
S/179/61/000/003/015/016
E031/E135

AUTHOR: Malyshev, I.P. (Moscow)

TITLE: The axisymmetric automodel motion of a gas with strong
            shock waves in a magnetic field

PERIODICAL: Akademiya nauk SSSR, Izvestiya, Otdeleniye
            tekhnicheskikh nauk, Mekhanika i mashinostroyeniye,
            1961, No.3, pp.182-183

TEXT: It is assumed that a thin axisymmetric body moves at a high
supersonic velocity; the motion of the gas is steady and adiabatic
behind the shock wave; the gas becomes conducting behind the shock
wave; the conductivity is constant; the magnetic field is due to
a conductor carrying current J/2πc. The problem is the same as
that of the unsteady motion of a gas with a magnetic field, the
gas being displaced by a cylindrical piston with an infinitely
great fall in the pressure on the shock wave caused by the motion
of the piston. The velocity of the piston is assumed to be
proportional to ⁻ⁿ and the equations obtained in a manner
similar to that described by L.I.Sedov in his book "Similarity and
dimensional methods in mechanics" (Ref.2: Gostekhteoretizdat, 1959)
are integrated numerically. In relations on the shock wave, it is
Card 1/2

X

MALYSHEV, I.P.

Use of visual aids in the study of the automobile. Politekh. obuch.
no.10:37-43 O '57.   (MLRA 10:9)
        (Visual aids)   (Automobiles—Study and teaching)

MALYSHEV, Ivan Mikhaylovich; DUKOV, V.M., redaktor; SMIRNOV, G.I., tekhn.red.

[Wave and quantum properties of light in the 10th grade physics course]. Volnovye i kvantovye svoistva sveta v kurse fiziki X klassa. Izd. 2-oe, perer. Moskva, Gos.uchebno-pedagog.izd-vo M-va prosv. RSFSR, 1957. 111 p.

(MIRA 11:2)

(Light)

MALYSHEV, I.M.

Aerodynamic tunnel model and its use in experimentation. Fiz. v shkole
7 no.1:74-77 '47.   (MLRA 6:11)

1. Leningrad, Gorodskoy institut usovershenstvovaniya uchiteley.
                                                     (Wind tunnels--Models)

Mnlyshev, I. M

AUTHOR: Malyshev, I.M. (Zolotkovo, Kalininskaya Oblast')   47-58-1-22/35

TITLE: Experiments With Silicon Semi-Conductors (Opyty s kremniyevym
               poluprovodnikom)

PERIODICAL: Fizika v Shkole, 1958, # 1, pp 60-63 (USSR)

ABSTRACT: The author stresses the importance of awakening school
               pupils' interest in physics as a science and describes how
               a casual find of a silicon crystal led to a whole series of
               experiments with this crystal.
                 There are 2 diagrams and 4 designs.

AVAILABLE: Library of Congress

Card 1/1

MALYSHEV, I.M.; GUROV, K.P., redaktor; GARNEK, V.P., tekhnicheskiy
redaktor

[Radiation problems in the physics course for class 10] Voprosy
izlucheniia v kurse fiziki X klassa. Moskva, Izd-vo Akademii peda-
gog. nauk RSFSR, 1954. 83 p.   (MLRA 8:5)
(Radiation)

MALYSHEV, I.K.; BOBCHENOK, P.K., inzh., nauchnyy red.; ZHURAVSKIY, N.A.,
        red. izd-va; ROZOV, L.K., tekhn. red.

        [Assembly of walls from large blocks] Montazh sten iz krupnykh blokov.
        Leningrad, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam,
        1961.   183 p.   (MIRA 14:10)
              (Building blocks)   (Concrete walls)

MALYSHEV, I.

Explanation of the State Commission of Mineral Resources attached
to the Council of Ministers of the U.S.S.R. on the conditions for
classifying oil and gas producible reserves in the C_2 category.
Geol. nefti i gaza 6 no.7:49-50 Jl '62.   (MIRA 15:6)

1. Predsedatel' Gosudarstvennoy komissii po zapazam poleznykh
iskopayemykh pri Sovete Ministrov SSSR.
          (Petroleum geology)   (Gas, Natural—Geology)

SOV/132-59-5-17/17

The **Directive** of the State Commission on the Reserves of Mineral Deposits (of the Council of Ministers of the USSR) on Determining the Humidity of Mineral Deposits in Assessing the Reserves

$$W = \frac{(P_1 - P_2)\ 100}{P_2}$$

which lead to a wrong assessment of the volumetric weight of the mineral deposit.

ASSOCIATION: Gosudarstvennaya komissiya po zapasam poleznykh iskopayemykh pri Sovete Ministrov SSSR. (The State Commission on the Reserves of Mineral Deposits of the Council of Ministers of the USSR).

Card 2/2

3   SOV/132-59-5-17/17

AUTHOR: Malyshev, I., Chairman

TITLE: The **Directive** of the State Commission on the Reserves of
               Mineral Deposits (of the Council of Ministers of the USSR) on
               Determining the humidity of Mineral Deposits in Assessing the
               Reserves

PERIODICAL: Razvedka i okhrana nedr, 1959, Nr 5, p 64 (USSR)

ABSTRACT: The above mentioned Commission states that the calculation
               of the degree of humidity of mineral deposits, while assess-
               ing their reserves, must be done with the following formula:

               $$W = \frac{(P_1 - P_2) \cdot 100}{P_1}$$

               where P_1 is the weight of the humid sample and P_2 - its weight
               after the drying up process. There were many cases when a
               wrong formula was used, that is

Card 1/2

132-58-6-13/13

AUTHOR: Malyshev, I.I. Chairman of the GKZ

TITLE: An Explanation on the Density Tables of Exploratory Mining in the Instructions of the State Commission of Mineral Deposit Reserves at the USSR Council of Ministers (Raz"yasneniye o tablitsakh plotnosti razvedochnykh vyrabotok v instruktsiyakh Gosudarstvennoy Komissii po zapasam poleznykh iskopayemykh pri Sovete Ministrov SSSR)

PERIODICAL: Razvedka i Okhrana Nedr, 1958, Nr 6, p 63 (USSR)

ABSTRACT: This is an explanatory notice on the use of tables of density by geologists. Geologists are warned not to stick formally to these tables but to apply them intelligently to the specific situation.

ASSOCIATION: GKZ
AVAILABLE: Library of Congress

Card 1/1 1. Geology-Density tables-Applications

USCOMM-DC-54754

МАЛЫШЕВ, И. И.

RUMANIA / Cosmochemistry, Geochemistry, Hydrochemistry.   D

Abs Jour: Ref Zhur-Khimiya, No 18, 1958, 60465.

Author : I. I. Malyshev.
Inst   :
Title   : To the Question of Types of Titanium Ore Occur-
          rences and of the Regularity of Their Distribution.

Orig Pub: An. Rom.-Sov. Ser. geol.-geogr., 1958, 12, No 1,
          39-43.

Abstract: Translation. See RZhKhim, 1957, 51029.

Card 1/1

49

GINZBURG, A.I.; NECHAYEVA, Ye.A.; LAVRENEV, Yu.B.; POZHARITSKAYA, L.K.;
MALYSHEV, I.I.,red.; RODIONOV, G.G.,red.; FAGUTOV, F.P.,red.;
KHRUSHCHOV, N.A.,red.; CHERNOSVITOV, Yu.L.,red.; SHMANENKOV, I.V.,
red.; SHCHERBINA, V.V.,red.; EYGELES, M.A.,red.; OVCHINNIKOVA, S.V.,
red.; AVERKIYEVA, T.A.,tekhn.red.

[Rare metal carbonatites] Redkometal'nye karbonatity. Moskva,
Gos.nauchno-tekhn.izd-vo lit-ry po geol. i okhr.nedr, 1958.
126 p. (Geologiia mestorozhdenii redkikh elementov, no.1)
(MIRA 12:2)

(Carbonates (Geology))

MALYSHEV, I.I.

Various types of titanium ore deposits and their distribution pattern.
Dokl. AN SSSR 112 no.2:311-314 Ja '57.   (MLRA 10:4)

1. Vsesoyuznyy institut mineral'nogo syr'ya, Moskva. Predstavleno
akademikom N. S. Shatskim.
                    (Titanium ores)

MALYSEV, I.I.

Evaluation of promising titanium deposits. Razved. i okh. nedr 23
no.4:1-12 Ap '57. (MIRA 11:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii i stan-
dartizatsii. (Titanium ores)

The Formation and Distribution (Cont.)   586

AVAILABLE: Library of Congress

Card 9/9   GO/ad
                                            9-17-58

The Formation and Distribution (Cont.)   586

Card 8/9

The Formation and Distribution (Cont.)   586

Card 6/9

The Formation and Distribution (Cont.)   586

Card 5/9

Card 4/9

The Formation and Distribution (Cont.)   586

titanium ore deposits. The author thanks the following Soviet
scientists for reviewing his manuscript and offering valuable
suggestions: Ya.D. Gotman, A.N. Zherdeva, Z.I. Ikonnikova,
I.A. Korovyakov, G.S. Momdzhi, A.A. Saukov, V.I. Smirnov,
G.A. Sokolov. There are 242 references of which 141 are Soviet,
92 English, 7 German, 1 French and 1 Finnish.

TABLE OF
CONTENTS: 3

Card 3/9

The Formation and Distribution (Cont.)   586

COVERAGE: The author attempts to answer certain questions con-
cerning the formation of titanium ore deposits in the crust of
the earth, namely: under what conditions they are formed, what
genetic types of titanium are known in nature, in which geologic
structures of the crust of the earth and in which rock forma-
tions titanium is most prevalent, and which titaniferous forma-
tions are of economic importance. It is hoped that the scien-
tific data presented in this book will enable the geologists to
take a sound approach to the problem of selecting and developing
the most promising titaniferous areas for industrial purposes.
The genetic types of titanium ore deposits are reviewed and
classified, and their industrial importance is discussed. The
conditions required for the formation of the magmatic, exogenic
and metamorphogenic (metamorphic and metamorphosed rocks) origin
of titanium ore deposits are described. The distribution and
characteristics of the important titanium ore deposits in the
USSR is given in Chapter 9. At the invitation of the Ministry
of Geology and Conservation of Natural Resources of the USSR,
the author took part for several years in prospecting for, and
in the evaluation of, titaniferous ore deposits in the USSR. In
this endeavor he had the opportunity to familiarize himself with
most of the available domestic and foreign material and litera-
ture dealing with the formation, evaluation and distribution of

Card 2/9

PHASE I   BOOK EXPLOITATION   586

Malyshev, Il'ya Il'ich

Zakonomernosti obrazovaniya i razmeshcheniya mestorozhdeniy tita-
    novykh rud (The Formation and Distribution of Titanium Ore
    Deposits) Moscow, Gosgeoltekhizdat, 1957. 271 p. 8,000 copies
    printed.

Sponsoring Agency: Vsesoyuznyy nauchno-issledovatel'skiy institut
    mineral'nogo syr'ya (VIMS). Ministerstvo geologii i okhrany
    nedr SSSR.

Ed.: Gotman, Ya.D.; Tech. Ed.: Krynochkina, K.V.; Ed. of Publish-
    ing House: Mukhin, S.S.

PURPOSE: This book is intended as a guide for geologists concerned
    with prospecting for titaniferous ores and with their scientific
    evaluation.

Card 1/9

MALYSHEV, I.I.

Principal genetic types and the industrial value of titanium
ore deposits. Razved.i okh.nedr 21 no.1:5-14 Ja-F '55.

(MLRA 9:12)

(Titanium ores)

BRAGIN, N.A.; MALYSHEV, I.G.; TANITSYNA, A.D.

Industrial production of milled peat in Western Siberia.
Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch. i tekh.
inform. no.3:13-15 '63.   (MIRA 16:4)

(Western Siberia--Peat industry)

ACC NR: AP7002162

LIU-3000 consists of a series of accelerating sections (the first of which was adjusted in 1963). Each section consists of 12 inductors which are vacuum sealed to permit a vacuum of 5×10^{-6} torr inside. The sections are connected in pairs into units with the aid of special pipes. Pumping and observation devices are situated between the units. The following data were obtained from tests: maximum current of accelerated electrons, 180 amp; maximum energy of injected electrons, 300 kev; energy of accelerated electrons, 485 kev; duration of the current pulse of the gun, 2.2 µsec; pulse duration of the accelerating voltage, 0.35 µsec; duration of the pulse front of accelerating voltage, 0.18 µsec; average gradient of accelerating field, 310 kv/m; and diameter of the accelerated beam (at the exit), 2 cm. In addition to the authors, other staff member of NIIEFA who participated in designing and testing the LIU-3000 were R. A. Alekseyev, L. M. Andrezen, A. V. Belyayeva, O. D. Volodin, M. A. Gashev, V. K. Gagen-Torn, N. K. D'yachenko, N. V. Toloknov, Yu. V. Lebedev, A. A. Markhel', P. G. Moreyev, A. V. Popkovich, A. N. Popov, S. V. Promyshlyayev, G. L. Saksaganskiy, Ya. L. Mekhelis, and A. T. Chesnokov. The authors thank V. I. Veksler and V. P. Saratsev for their help with the work. Orig. art. has: 4 formulas and 11 figures.

SUB CODE: 20/ SUBM DATE: 14Apr66/ ORIG REF: 003/ OTH REF: 001/
ATD PRESS: 5112

Card 2/2

ACC NR: AP7002162

AUTHOR: Anatskiy, A. I.; Bogdanov, O. S.; Bukayev, P. V.; Vakhrushin, Yu. P.; Malyshev, I. F.; Nalivayko, G. A.; Pavlov, A. I.; Suslov, V. A.; Khal'chitskiy, Ye. P.

ORG: none

TITLE: Linear induction accelarator

SOURCE: Atomnaya energiya, v. 21, no. 6, 1966, 439-445

TOPIC TAGS: linear accelerator, electron accelerator, mev accelerator

ABSTRACT:
A description is given of the LIU-3000 linear induction accelerator, which was designed at the Scientific-Research Institute for Electro-Physical Devices (NIIEFA) in 1962. The LIU-3000 was designed for an energy of 3 Mev and a pulse current of up to 200 amp. Its operation for electron acceleration is based on the utilization of a rotational electric field, created in a system consisting of several circular transformers. The maximum possible current of the accelerated electrons in such an accelerator with focusing sufficient to compensate for the repelling force of the space charge, is determined basically by the power of the commuting element in the primary circuit of the inductor. The LIU-3000's power can be brought to 1000 amp/pulse, what is impossible in other types of accelerators. The

Card 1/2

UDC: none

L 3773-66

ACCESSION NR: AT5007950

tors. The field strength in the resonator gaps which corresponds to a given mag-
nitude of the deflecting pulse was determined on the basis of the field pictures
that were taken in an electrolytic tank. Corrections were made for the variation
in the high-frequency field during the particles' flight time through a resonator
and for the difference between the static and high-frequency pictures of the field
in a gap. Measures were also taken to eliminate in the resonators the secondary
electron resonance discharge. Orig. art. has: 2 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury
imeni D. V. Yefremova GKAE SSSR (Scientific-Research Institute of Electrophysical
Equipment, GKAE SSSR)

SUBMITTED: 26May64

NO REF SOV: 000

ENCL: 00

OTHER: 000

S UB CODE: NP

Card 3/3

L 3773-66

(1)

alternate deflecting systems--in the form of a waveguide or band line operating in the energy recuperation regime, or in the form of a system of many-cavity or single-cavity volume resonators. As shown by the computations, it is most expedient to make the deflecting system in the form of a set of independently phased resonators of the quasitoroidal type, which operate in the fundamental mode of the electric oscillations, with the use of high-frequency electrical field for deflecting the particles. The report discusses the resonators employed in the deflecting system and their arrangement in the system. The chosen resonator form permits one to obtain a specific homogeneity of the deflecting field in the cross section of a beam by selection of suitable dimensions. The report discusses the characteristics of the developed system. The linear dimensions of the apertures in the resonators for channeling the beam are commensurable with the operating wavelength, which fact leads to the radiation of electromagnetic energy and to the appearance of a strong bond among the resonators. In order to eliminate this phenomenon and preserve complete transparency of the channel for the beam of deflected particles among the resonators, the waveguide segments are provided with limiting wavelength much lower than the operating one, and feedback is introduced in the magnetic field. As shown by investigations, the bond among the resonators is almost completely eliminated. Considerable attention was paid to the electric transparency of the resona-

Card 2/3

L 3773-66   E/T(m)   DIAAP   GS   S/0000/64/000/000/0791/0794

ACCESSION NR: AT5007950

AUTHOR: Davydov, M. S.; Dorfman, L. G.; Yekimov, V. V.; Zalmanzon, V. B.; Zeytlenok, G. A.; Levin, V. M.; Malyshev, I. F.; Petelin, I. G.; Petrunin, V. I.; Popov, V. A.; Trushin, N. Kh.; Umanskly, I. G.; Finkel'shteyn, I. I.

TITLE: Deflecting system of 5-Gev antiproton channel

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 791-794

TOPIC TAGS: antiproton, high energy particle, particle beam, high energy accelerator

ABSTRACT: Specific requirements flowing from the applied principle of particle resolution have determined the choice of the type of deflecting system. During development of the device the requirements were also considered from the viewpoint of the high-frequency power supply system. The creation of a high-power 150-megahertz frequency generator that operates with pulses of several milliseconds duration is a technically complex task. Therefore, special attention was given during the development of the deflecting system to its economy and efficiency. Taking these considerations into account, computations were carried out of a number of

Card 1/3

GASHEV, M.A.; GRITOV, G.K.; L'YACHENKO, K.K.; K.MAR, Yo.G.; MALYSHEV,
I.F.; MOROSZGH, N.A.; POPKOVICH, A.V.; RATNIKOV, B.K.; ROZHDESTVENSKIY,
B.V.; RUMYANTSEV, N.H.; SAKSAGANSKIY, G.L.; SPEVAKOVA, F.M.; STOLOV,
A.M.; STREL'TSOV, N.S.; YAVNO, A.Kh.

Principal mechanical characteristics of the experimental thermo-
nuclear plant "Tokamak-3." Atom. energ. 17 no.4:287-294 O '64.
(MIRA 17:10)

63537-65 EPF(n)-2/EPA(s)-2/EWA(h)/EWT(m)/EWP(b)/EWP(t) Pt-5/Pu-4/Peb IJP(c)

ACCESSION NR: AP5017828 WW/JD/JG

UR/0286/65/000/011/0058/0058

621.521

AUTHOR: Malyshev, L. F.; Rybas, K. P.; Ivanov, B. A.; Yefimov, V. K.

TITLE: Device for evaporation of titanium. Class 27, No. 171500

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 11, 1965, 58

TOPIC TAGS: evaporation device, titanium evaporation

ABSTRACT: This Author Certificate introduces a device for evaporation of titanium by means of electron-beam heating in sorption-ionic pumps. The device contains an incandescent tungsten cathode and titanium condenser. To assure complete and uniform evaporation and to prevent overheating, the condenser from the side cathode is equipped with a refractory tantalum substrate. Orig. art. has: 1 figure. [AZ]

ASSOCIATION: Predpriyatiye gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR (State Committee on Atomic Energy Utilization, SSSR)

SUBMITTED: 10Jun63 ENCL: 00 SUB CODE: IM, NP

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4049

Card 1/1

L 0094C-66

ACCESSION NR: AT5015937

antiproton channel designed along the above lines (details given) has these characteristics: 16 rectangular-deflecting-area resonators; resonance frequency, 150 Mc; Q-factor, 15000 or higher; shunt resistance, 0.8 Mohms; power loss in one resonator is 60 kw and in the entire deflecting system, 1 Mw at a rated electric-field strength of 31.2 kv/cm. All resonators are mounted in a 3-section 14-m long 1.5-m diameter vacuum tank. The resonators are connected to their feeders via vacuum lead-ins and two-loop matchers. A separate-excitation 1.5-Mw vhf oscillator produces 6-μsec pulses at a repetition rate of 5 p/min. Orig. art. has: 12 figures and 6 formulas.

ASSOCIATION: none

SUBMITTED: 00   ENCL: 00   SUB CODE: NP, EC

NO REF SOV: 005   OTHER: 001

Card 2/2

L 00940-66   EWT(m)

ACCESSION NR: AT5015937   UR/3092/65/000/003/0051/0063

AUTHOR: Davydov, M. S.; Zeytlenok, G. A.; Levin, V. M.; Malyshev, I. F.;
Petelin, I. G.; Petrunin, V. L.; Trushin, N. F.; Finkel'shteyn, I. I.

TITLE: Problems of constructing the deflecting system of a 5-Gev antiproton
channel

SOURCE: Moscow. Nauchno-issledovatel'skiy institut elektrofizicheskoy
apparatury. Elektrofizicheskaya apparatura; sbornik statey, no. 3, 1965, 51-63

TOPIC TAGS: antiproton, antiproton isolation

ABSTRACT: The construction principles of an antiproton-isolating r-f deflecting
system are set forth. Calculations showed that the most expedient deflecting
system should comprise a set of independently-phased single-gap quasi-toroidal
resonators operating at the fundamental wave mode, the deflection being
accomplished by an electric r-f field. The deflection system of the OIYaI 5-Gev

Card 1/2

L 2273-66
ACCESSION NR: AT5007942

installed in the electromagnet poles. Remotely controlled measuring probes and targets for operating with the internal beam are installed in the chamber. Placement of the ion source is also done remotely; moreover, it is possible, without disruption of the vacuum, to shift the cathode and also the source as a whole. The magnetic field was modelled with an electromagnet having a pole diameter of 342 mm, on which several alternative magnetic systems were investigated; and also with an electromagnet having a pole diameter of 685 mm, which was used to investigate in detail modifications in the weakly-spiral structure. On the basis of the electromagnet with poles 685 mm in diameter, a start has been made at the present time on a cyclotron with three-dimensional variation of the magnetic field, with the magnetic system of a type described in the present report. The current cyclotron will accelerate protons up to 8 Mev and deuterons up to 4 Mev, which will permit investigations into various alternative systems for yielding beams. Orig. art. has: 6 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research Institute of Electrophysical Equipment, GKAE SSSR)

SUBMITTED: 20May64   ENCL: 00   SUB CODE: EE, NP
NO REF SOV: 000   OTHER: 001

Card 3/3

L 2273-66

ACCESSION NR: AT5007942

total electromagnetic power, 2800 kilowatts; electromagnet's weight, 720 tons; frequencies of resonance system, 5-22 megahertz; accelerating voltage in Dee, 125 kilovolts; Dee gap, 50 mm; high-frequency load, 600 kilowatts; stability, 10^{-4} (winding currents), 10^{-5} (frequency of accelerating voltage), and 10^{-3} (its amplitude). After deflection the beam is directed into a commutating magnet by which the beam can be directed against targets set up in three experimental rooms: (I) high-intensity beams, (II) neutron time-of-flight experiments, and (III) nuclear precision spectroscopy with electromagnetic monochromator. Ion-optical channeling, focusing and commutating of the beam are done by six pairs of quadrupolar lenses, two identical rotary electromagnets, a monochromator electromagnet, and two small electromagnets for correction of the beam in the vertical direction. The resonance system is a quarter-wave coaxial line ending with the 180-degree Dee. The resonant frequency is reset by remote displacement of a plate without disrupting the vacuum. The frequency is established with an accuracy of 5-18 kc plus or minus. Smooth high-frequency regulation is provided by two trimmers, permitting regulation of frequency to 2-4%. The high-frequency oscillator has a capacitative connection with the resonance system. A connecting rod is used, without disruption of the vacuum, to shift the Dee in the vertical and horizontal planes, and also along its own axis. The accelerator chamber consists of two sections: a high-vacuum chamber able to exhaust, along with the resonant line, the magnetic gap; and a fore-vacuum section

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L 2273-66   EWT(m)/EPA(w)-2/EWA(m)-2   IJP(c)   GS

ACCESSION NR: AT5007942   UR /0000/64/000/000/0500/0603

AUTHOR: Alekseyev, A. G.; Basargin, Yu. G.; Zhukov, I. F.; Lavrent'yev, Yu. K.;
Litunovskiy, R. N.; Malyshev, I. F.; Nevrov, N. P.; Stepanov, A. V.; Tuzov, I. V.

TITLE: Basic characteristics of the isochronous cyclotron with variable particle
energy

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963.
Trudy. Moscow, Atomizdat, 1964, 600-603

TOPIC TAGS: high energy accelerator, ion beam, cyclotron

ABSTRACT: At the Scientific Research Institute of Electrophysical Equipment im.
D. V. Yefremov, a 2.4-meter cyclotron is being developed with a magnetic field hav-
ing 3-dimensional variation. This cyclotron is intended to accelerate particles
with Z/A equal to 0.125-1 in a wide range of energies. The limits of energy varia-
tion, in Mev, are: 7.5-100 (protons); 5-60 (deuterons); 10-120 (alpha-particles),
and 10-145 (nitrogen ions). The device is designed to obtain relatively large ion
currents, which will make it possible to realize experiments with beams against in-
ternal and remote targets. The principal parameters of the cyclotron include:
pole diameter, 2400 mm; magnetic structure, tri-sector and weakly spiral; gaps,
230 mm (hill) and 960 mm (valley); magnetic field in center, 4000-17,000 oersteds;

Card 1/3

L 58913-65

ACCESSION NR: AT5007938

2

producing beams of secondary particles and their channeling and focusing; (g) devel-
opment of plans for the protection of personnel and instruments from radiation. The
paper concludes that the relativistic cyclotron offers wide new possibilities for
nuclear research in radiobiology, solid state physics, etc. Orig. art. has: 7
figures, 3 tables.

ASSOCIATION: (I) Ob"yedinennyy institut yadernykh issledovanniy, Dubna (Joint
Institute of Nuclear Research, Dubna); (II) Nauchno-issledovatel'skiy institut
elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research
Institute of Electrophysical Equipment, GKAE SSSR)

SUBMITTED: 26May64   ENCL: 00   SUB CODE: NP

NO REF SOV: 009   OTHER: 002

Card 3/3

L 58913-65

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ACCESSION NR: AT5007938

blems of the OIYaI jointly with the NIIEFA GKAE SSSR and other scientific research
institutes with rated current proton beam up to 500 microamperes. The choice of
energy was made on the basis of the fact that at 700 Mev the cross-sections for
formation of pions in nucleon-nucleon and nucleon-nuclei collisions are close to
maximum, and also because of the possibility of utilizing the electromagnet of the
680-Mev synchrocyclotron of the OIYaI for the new accelerator. The following new
problems were considered in the design because there is now no similar operational
high-energy accelerator: (a) verification of the linear theory and development of
the nonlinear theory of spatial stability and of the phase motion of particles in
the accelerator; (b) creation in a large space of a magnetic field with complex
configuration and its stabilization with an unusually high degree of accuracy; (c)
production of apparatus for the measurement of strongly nonhomogeneous magnetic
fields (gradients up to 4000 oe/cm) with an accuracy better than 10^4; (d) produc-
tion of high-frequency oscillators with power up to 2 MW at a frequency of 12 mega-
cycles per second (12 Mc), with frequency stability of the order of 10^{-5}, which
operate with a resonance system with amplitude of the accelerating high-frequency
voltage of up to 100 kilovolts; (e) design of an accelerator and its auxiliary sys-
tems which ensure effective operation and maintenance under conditions of high levels
of activity; (f) development of a highly effective system for the channeling of pro-
ton beams from the accelerator, and also solution of the problems connected with

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L 58913-65   EWT(m)/EPA(w)-2/EWA(m)-2   Pt-7   IJP(c)   GS

S/0000/64/000/000/0547/0555

ACCESSION NR: AT5007938

AUTHOR: Glazov, A. A.; Denisov, Yu. N.; Dmitriyevskiy, V. P.; Zamolodchikov, B.I.;
Zaplatin, N.L.; Kol'ga, V. V.; Komochkov, M. M.; Kropin, A. A.; Dzhelepov, V. P.;
Gashev, M. A.; Malyshev, I. F.; Monoszon, N. A.; Popkovich, A. V.

TITLE: Relativistic 700-Mev proton cyclotron

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy.
Moscow, Atomizdat, 1964, 547-555

TOPIC TAGS: proton accelerator, relativistic particle

ABSTRACT: Current theoretical concepts and experimental data conclusively show that
to understand the microcosm further it is necessary to increase the beam intensity
of accelerators by a factor of 10^3 and produce accelerators with energies up to
thousands of Bev's. For the past 5-6 years constant gradient accelerators (500-
900 Mev cyclotrons) have appeared to be the best way to produce particles with ener-
gies up to 1 Bev (1 Gev) with beam currents of the order of 1 milliampere instead
of 1 microampere (as found in synchrocyclotrons). The present report describes the
design for a 700-Mev proton cyclotron developed by the Laboratory of Nuclear Prob-

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L 45257-65
ACCESSION NR: AT5007932

25, 12.5, 6.25, 3.125, 1, and a single absence. (Note. The half-width is the width of the energy spectrum at a level half the current maximum.) The design and construction of the electron injector and the remaining parameters of the accelerated beam were discussed by V. A. Vishnyakov et al. (same conference p. 440). The present report discusses matters relating to the adjustment of the accelerator: the system's electrodynamic and loaded characteristics, the accuracy of construction of the sections, their resonance frequencies, group velocity and damping, shunt resistance and partial power of the principal accelerating harmonic. Orig. art. has: 6 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR (Physico-technical Institute, AN UkrSSR); Nauchno-issledovatel'skiy institut elektro-fizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific-Research Institute of Electrophysical Equipment GKAE SSSR)

SUBMITTED: 26May64   ENCL: 00   SUB CODE: EE, NP

NO REF SOV: 000   OTHER: 000

Card 3/3

L 4 3 67-65
ACCESSION NR: AT5007932

gen pulse thyratron switching. A generator-amplifier having metal-ceramic triodes with quartz frequency stabilization of the master circuit is used for excitation of the klystrons. The generator signal is amplified by a separate klystron and is propagated along waveguide transmission lines by the accelerator, entering into the klystrons of the above-mentioned injector and ten accelerating sections. The power at the output of the accelerating sections is absorbed in carborundum chargers. The vacuum in the accelerator and in the high power waveguide lines is attained by means of ion-absorption pumps, which are set up at the inputs of the sections and near the vacuum-separator cones. Ridding the electron beam of secondary products and focusing at the target are carried out with two reversible magnets and five quadrupole lenses. A transformer complex and direct-current sources are used for the system's regulated power supply. The high-frequency power supply system, which consists of klystron amplifiers, waveguide and co-axial transmission lines, and automatic phasing system, and also the control, locking, and signal panels are placed in a special room. The rated accelerator parameters are: 360-Mev electron energy at spectrum maximum; 5% half-width of energy spectrum $\Delta W/W$; 1 µamp full acceleration current at output of parallel-transfer system (mean) for 5% half-width and $N = 50$/sec; 0.2 cm beam diameter at output of parallel-transfer system; 1.5 µsec current pulse; frequency (number per second N) of bunches of current pulses - 50,

Card 2/3

4 c

L 45257-65   EWA(m)-2/EWT(m)/EWA(m)-2   Pt-7/Pab-10   IJP(c)   GS
                                         S/0000/64/000/000/0435/0439
ACCESSION NR: AT5007932

AUTHOR: Val'ter, A. K.; Grishayev, I. A.; Dem'yanenko, G. K.; Zykov, A. I.;
Zeytlenok, G. A.; Malyshev, I. F.; Turkin, F. F.; Khokhlov, V. K.; Makhnenko, L. A.

TITLE: Linear traveling-wave electron accelerator with 360-Mev output energy

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963.
Trudy. Moscow, Atomizdat, 1964, 435-439

TOPIC TAGS: high energy accelerator, traveling wave electron accelerator, injector,
waveguide

ABSTRACT: One of the stages in the development, at Khar'kov, of the linear electron
accelerators was the construction of a 360-Mev accelerator, with accelerating track
divided into 11 sections consisting of a short injector and 10 sections 4.5 meters
each. During colliding beam experiments the sixth section is absent, in its place
being the magnets of the injecting devices of the storage rings. The electron in-
jector and the accelerating sections are located in a concrete bunker. Klystrons
with nominal power of 20 Mw in the pulse are used for the high-frequency power
supply. Capacitive energy storers are used in the klystron modulators with hydro-

Card 1/3

L 46103-65

ACCESSION NR: AT5007930

2

out by means of one injector. "The design and parameters of the one injector was the concern of V. A. Vishnyakov and associates." Orig. art. has: 5 figures, 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR (Physico-technical Institute, AN UkrSSR); Nauchno-issledovatel'skiy institut elektro-fizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific-research Institute of Electro-Physical Equipment GKAE SSSR)

SUBMITTED: 26May64   ENCL: 00   SUB CODE: NP

NO REF SOV: 000   OTHER: 000

Card 3/3

L 46163-65
ACCESSION NR: AT5007930

tation of the klystrons is carried out from a common wave-guide line, which is
supplied from a high power klystron excited by a regulated master oscillator. The
group velocity of the electromagnetic wave in the excitation line is equal to about
0.805 c. The constant phase of the electromagnetic wave at klystron output is
maintained by a phasing system with an accuracy of $\Delta\phi = 12°$. The accelerating sec-
tions are installed in a special bunker which has a concrete wall-like shield and
is covered on top by sectional reinforced-concrete slabs. The output installation
is shielded by a special earthen enclosure covered by reinforced-concrete slabs.
Purification of the beam from harmful admixtures is carried out by means of a mag-
netic parallel transfer system and magnetic separators. The present report dis-
cusses the parameters of the main units, such as: the injector, the vacuum system
$(2 \cdot 10^{-6}$ mm/Hg), the accelerator's high-frequency pulsed power supply, the output
installation, the formation and measurement of the beam, the control of the accele-
rator. It is planned to store the electrons and positrons which are obtained by
the present accelerator in a suitable ring, but experience must first be gained
with small storage rings and colliding beams, under study at the Physico-technical
Institute, Academy of Sciences, Ukrainian SSR. The present accelerator was con-
structed in accordance with the principle of uniform structure, but not constant
field. The entire adjustment phase of the large accelerator's operation is carried

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L 46163-65   EWT(m)/EPA(w)-2/EWA(m)-2   Pt-7/Pab-10   IJP(c)   05

S/0000/64/000/000/0420/0424

ACCESSION NR: AT5007930

AUTHOR: Val'ter, A. K.; Grishayev, I. S.; Yerem?nko, Ye. V.; Kondratenko, V. V.;
Zeytlenok, G. A.; Kuznetsov, G. F.; Levin, V. M.; Malyshev, I. F.; Rumyantsev, ?.
V. V.; Demidov, A. N.; Turkin, F. F.; Khokhlov, V. K.

TITLE: Linear traveling-wave accelerator of electrons with output energy 2 Gev

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963.
Trudy. Moscow, Atomizdat, 1964, 420-424

TOPIC TAGS: high energy accelerator, traveling wave electron accelerator, klystron

ABSTRACT: The accelerator consists of an injector and 49 accelerating sections each
4.5 meters long. The accelerator operates with a traveling 1/2π-wave with constant
phase velocity equal to the velocity of light c and group velocity equal to 0.04c.
The operating frequency of the accelerator is 2797 mc for a temperature of the ac-
celerating section equal to 37°C. The energy of the accelerated electron beam is
2 Gev, the mean current is 1.2 µamp for a transmission frequency of 50 times per
second and duration of the high-frequency pulse of τ = 2 msec. The high-frequency
power supply for each section is independent of the klystron amplifier. The exci-

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L 13221-65
ACCESSION NR: AP4047415

not exceed $1-2 \times 10^{-7}$ mm Hg during the interval between gas admis-
sion, with the pressure in the outside chamber being $1-2 \times 10^{-6}$
mm Hg. Orig. art. has: 8 figures.

ASSOCIATION: None

ENCL: 00

SUBMITTED: 23Nov63

SUB CODE: NP, ME   NR REF SOV: 000   OTHER: 000

Card 3/3

L 13221-65
ACCESSION NR: AP4047415

ber by a vortical electric field, and acts as an equivalent secondary turn of a pulse transformer. The produced plasma pinch is stabilized with a longitudinal magnetic field of a toroidal solenoid, inside which the vacuum chamber is located. The magnetic core of the pulse transformer carries the primary vortical-field winding, the demagnetization winding, and the winding for induction heating. The set-up is fed from special power systems. The electromagnetic system, the power supply, and the vacuum system are described in some detail. The longitudinal field intensity reaches 40 kG. The vortical field values are 250 and 50 V per turn with pulse durations 10 and 50 milliseconds, and with programming of the waveform such as to maintain a constant current in the plasma pinch. The power supply delivers a peak power of 77,000 kW, maximum 7000 A, no-load voltage 11 kV, and stored energy 180 million Joules. The vortical field is fed from four capacitor banks rated 1000 μF at 20 kV, 11,000 μF at 10 kV, 78,000 μF at 5 kV, and 30,000 μF at 5 kV. The capacitor-bank parameters can be varied over a wide range. The vacuum in the liner does

Card 2/3

L 33221-65 EWT(l)/EWI(k)/EWT(m)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EEC(b)-2/EWA(m)-2
Pg-c/Po-4/Pab-10/Pt-4 IJP(c)/SSD(b)/ASD(p)-3/BSD/AEDC(b)/RAEM(a)/ESD(gs)/ESD(t)
DW/AT
S/0089/64/017/004/0287/0294

ACCESSION NR: AP4047415

AUTHORS: Gashev, M. A.; Gustov, G. K.; D'yachenko, K. K.; Komar, Ye. G.; Malyshev, I. F.; Monoszon, N. A.; Popkovich, A. V.; Ratnikov, B. K.; Rozhdestvenskiy, B. V.; Rumyantsev, N. N.; Saksaganskiy, G. L.; Spevakova, F. M.; Stolov, A. M.; Strel'tsov, N. S.; Yavno, A. Kh.

TITLE: Main technical characteristics of the "Tokamak-3" experimental thermonuclear installation

SOURCE: Atomnaya energiya, v. 17, no. 4, 1964, 287-294

TOPIC TAGS: thermonuclear pinch, thermonuclear fusion, plasma research, plasma pinch/ Tokomak-3

ABSTRACT: The "Tokamak-3" is intended for the investigation of a toroidal quasi-stationary discharge in the strong longitudinal magnetic field. The toroidal discharge is produced in the vacuum cham-

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L 43088-65

ACCESSION NR: AT5007918

(3) Radiotekhnicheskiy institute AN SSSR (Radio Engineering Institute, Academy of Sciences SSSR). (4) Gosudarstvennyy proyektnyy institut GKAE SSSR (State Planning Institute, GKAE SSSR).

SUB CODE: EE, NP

ENCL: 00

SUBMITTED: 26May64

OTHER: 001

NO REF SOV: 002

Card 4/4

L 43088-65
ACCESSION NR: AT5007918

welded joints inside the coils. The winding consists of 4 sections, two of which are disposed on the upper pole and two on the lower. The most important characteristics of the electromagnet and power supply system are described in a table. Also described are the vacuum chamber and accelerating field (obtained by 53 paired resonators with ferrite rings, which operate at the 30-th harmonic of revolution and give accelerating potential of 350 kilovolts). The ring tunnel and the general arrangement of the accelerator are shown in figures and described. The building for the injector and portions of the ring tunnel from the injector to the experimental room have been completed in the main and are ready for installation of equipment. This room, in the form of a single-aisle building without internal supports, permits one to work on beams brought into the inner and outer sides. A 90-meter arch covers this room, whose overall length is 150 meters. Provisions have been made for a second experimental room at the southwest part of the ring. Orig. has 4 figures, 2 tables.

ASSOCIATION: Institute teoreticheskoy i eksperimental'noy fiziki GKAE SSSR (Institute of Theoretical and Experimental Physics, GKAE SSSR), (2) Nauchno-issledovatel'skiy institut elektrofizichenskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research Institute of Electrophysical Apparatus, GKAE SSSR),

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L 43088-65

ACCESSION NR: AT5007918

sections, some of which are utilized for input and exit of beams. The super-period design is described. The lengthened sections were obtained as a consequence of shortening the focusing and defocusing blocks by 112 cm. The focusing properties of the magnetic channel were diminished consequently, but very little; and the limiting energy was lowered by 2-3 Gev. The construction of the magnet is described. Each of the magnetic blocks is divided lengthwise into 5 sub-blocks which are enveloped by the common winding. These sub-blocks consist of laminar two-millimeter silicon steel. These steel sheets were stamped out without subsequent mechanical working, and were subjected to sorting and intermixing in order to smooth out their magnetic characteristics. The sub-blocks are constricted by lateral welded plates without adhesion. Provision was made for windings on the poles in order to correct for pole nonlinearity and for variations in the drop reading. These windings make it possible to introduce artificial quadratic (square) nonlinearity that changes the dependence of the frequency of transverse oscillations during a pulse. In order to correct for straying of the residual field, provision has been made for windings on the yoke in series with the main winding. The sub-blocks must undergo calibration on a magnet stand in order to make correcting systems more precise and to determine the most convenient disposition of the sub-blocks along the ring. The winding of the electromagnet is made of aluminum busbars with hollow cores for cooling water. The length of the busbar is so selected that there would be no

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18

L 43088-65   EWT(m)/ EPA(w)-2/EWA(m)-2   Pab-10/Pt-7   IJP(c)   JT/GS

S/0000/64/000/000/0197/0201

ACCESSION NR: AT5007918

AUTHOR: Vladimirskiy, V. V.; Gol'din, L. L.; Koshkarov, D. G.; Tarasov, Ye. K.;
Yakovlev, B. M.; Gustov, G. K.; Komar, Ye. G.; Kulikov, V. V.; Malyshev, I. F.;
Monoszon, N. A.; Popkovich, A. V.; Stolov, A. M.; Strel'tsov, N. S.; Titov, V. A.;
Vodop'yanov, F. A.; Kuz'min, A. A.; Kuz'min, V. F.; Mints, A. L.; Rubchinskiy,
S. M.; Uvarov, V. A.; Zhadanov, V. M.; Filaretov, S. G.; Shiryayev, F. Z.

TITLE: 60-70 Gev Proton Synchrotron

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy.
Moscow, Atomizdat, 1964, 197-201

TOPIC TAGS: high energy accelerator, synchrotron

ABSTRACT: A 60-70 Gev proton synchrotron with strong focusing is being constructed
not far from Serpukhov, as has been reported earlier (e.g. "Research Institute for
Electro-Physical Equipment, Leningrad," in Proceedings of the International Confer-
ence on High Energy Accelerators and Instrumentation (CERN, 1959), p. 373). The
present report describes parameter changes and improvements in precision structural
characteristics of the accelerator, and the present state of construction in mid-
1963. The parameters of the magnet are presented in a table. A small change in
the original plans permitted an increase in the length of a part of the free

Card 1/4

MALYSHEV, I.F.; RYBAS, K.P.

Time of existence of a virtual cathode. Elektrofiz. (MIRA 18:3)
no.2:179-188 '64.

ACCESSION NR: AT4035117

3.8 meters long and has inside dimensions 44 x 120 mm. The tube is
1.5 mm thick and is not corrugated. The forms used to shape the
vacuum chamber tubes are described, along with the vacuum systems.
Orig. art. has: 8 figures and 2 formulas.

ASSOCIATION: None

SUBMITTED: 00   DATE ACQ: 07May64   ENCL: 00

SUB CODE: NP   NR REF SOV: 004   OTHER: 003

Card   3/3

ACCESSION NR: AT4035117

uniformity of the field, injection energy, injection geometry, de-
sired intensity, the chamber aperture, the required vacuum, the
materials, and other factors. This is followed by a description
of the 7-BeV proton synchrotron and the 6-BeV proton synchrotron
vacuum chamber and their individual parts. The 7-BeV proton syn-
chrotron vacuum chamber consists of a ring about 80 mm in diameter
having 112 curvilinear sections placed in the gaps of the magnet
blocks, and 112 straight-line sections between the blocks. The main
elements of the ring are the curved sections, the majority of which
constitute thin corrugated tubes of elliptical cross section with
flanges welded on the end. Each tube is approximately 2 meters
long, has inside dimensions 84 x 114 mm (axes of the ellipse), and
is made of 1Kh18N9T stainless steel 3 mm thick, the corrugations
being 3 mm high at a spacing of 7 mm. The 6-BeV electron synchro-
tron chamber is a ring approximately 70 meters in diameter, consist-
ing of 48 curvilinear sections and 48 straight-line sections. Each
curvilinear section (radius of curvature ~25 meters) is approximately

Card 2/3

ACCESSION NR: AT4035117

S/3092/63/000/001/0193/0203

AUTHORS: Maly*shev, I. F.; Popkovich, A. V.; Fefelov, P. A.; So-
kolov, Yu. A.

TITLE: Vacuum chambers for strong focusing synchrotrons

SOURCE: Moscow. Nauchno-issledovatel'skiy institut elektrofizich-
eskoy apparatury*. Elektrofizicheskaya apparatura; sbornik statey,
no. 1, 1963, 193-203

TOPIC TAGS: cyclic accelerator, electron accelerator, proton ac-
celerator, electron synchrotron, proton synchrotron, strong focusing
accelerator, vacuum equipment

ABSTRACT: Some designs of vacuum chambers for strong-focusing ac-
celerators, developed in recent years in NIIEFA, are described. The
description is preceded by an exposition of the requirements imposed
on the design of accelerator vacuum chambers with respect to the

Card 1/3

Electrostatic Accelerators (Cont.)   SOV/6536

   Sections 1—3 of Ch. I are written by A. K. Val'ter; Section 4 of
   Ch. I and Chs. II, V, and VII are written by A. A. Tsygikalo;
   Ch. III, by A. N. Serbinov; Ch. IV, by S. P. Tsytko; and Ch. VI, by
   I. F. Malyshev, F. G. Zheleznikov, and G. Ya. Roshal'. There are
   182 references: 73 Soviet and 109 non-Soviet.

TABLE OF CONTENTS [Abridged]

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SOV/6536

PHASE I B()K EXPLOITATION

Val'ter, A. K., F. G. Zheleznik)v, I. F. Malyshev, G. Ya. Roshal',
A. N. Serbinov, A. A. Tsygikalo, and S. P. Tsytko

Elektrostaticheskiye uskoriteli zaryazhennykh chastits (Electrostatic
Accelerators of Charged Particles) Moscow, Gosatomizdat, 1963.
301 p. 4700 copies printed.

Ed. (Title page): A. K. Val'ter, Academician, Academy of Sciences of
the UkrSSR.

Ed.: A. V. Gorokhovskiy; Tech. Ed.: N. A. Vlasova.

PURPOSE: This book is intended for scientists, students, engineers,
and technicians developing, utilizing, or studying high-potential
engineering and acceleration of charged particles.

COVERAGE: This textbook on electrostatic generators is devoted chiefly
to electrostatic accelerators intended for nuclear research.

Card 1/8

_11_

The design of the 7-Bev ...   S/089/62/012/006/003/019
                                               B102/B104

curvature of the trajectories in the bending magnets (C), 31 m, and in the
compensation magnets (X), ∞; number of magnetic sectors, 98C + 14X; gap
length between the C-magnets, 304.0 mm; gap length around the X-magnets,
417.5 mm; index of the decrease in field strength, 460; internal height
and width of the chamber, 80 and 110 mm, respectively; number of betatron
oscillations per revolution, 12.75, and per periodic element, 0.91;
number of magnets per periodic element, 8; total critical energy, 19.2 Bev;
maximum deviation of the periodic orbit with 100% deviation of the
momentum from the equilibrium momentum, 1.47 m; rate of energy increase
per revolution, 4.3 kev; duration of one cycle, 1.55 sec; 10-12 cycles/min;
particle revolution frequency at the beginning of the cycle, 0.11 Mc/sec,
and at the end, 1.19 Mc/sec; frequency of synchrocyclotron oscillations,
3600 and 130 cps; weight of the electromagnet steel, 2500 tons; maximum
power of the supply system, 25 Mw; Van de Graaff injector (particle energy,
3.8 Mev; field strength 90 oe); admissible deviations from field strength
and field gradients, ∿10⁻³; deviations at the chamber edge due to
nonlinearities, ∿10⁻²; admissible frequency deviation of the accelerating
field at the beginning of the cycle, 10⁻³, and at the end, 5·10⁻⁵. There
are 1 figure and 1 table.

SUBMITTED: March 12, 1962
Card 2/2

MALYSHEV, I.F.

AUTHORS: Vladimirskiy, V. V., Komar, Ye. G., Mints, A. L.,
                Gol'din, L. L., Monoszon, N. A., Rubchinskiy, S. M.,
                Tarasov, Ye. K., Vasil'yev, A. A., Vodop'yanov, F. A.,
                Koshkarev, D. G., Kuryshev, V. S., Malyshev, I. F., Stolov,
                A. M., Strel'tsov, N. S., Yakovlev, N. N.

TITLE: The design of the 7-Bev proton accelerator

TEXT: The history of the first Soviet cyclic accelerator with rigid
focusing is briefly described, and the most important data on its planning
and operation are presented. Planning was started in 1953. The parameters
of this proton accelerator, the energy of which exceeds the antinucleon
production threshold, were so chosen that the dependence of the orbital
circumference on the particle momenta was completely compensated. This was
achieved by employing 14 quadrupole magnets with orbits of negative
curvature. Technical data: output current, 10^{10} protons/pulse; maximum
field strength, 8475 oe; length of equilibrium orbit, 251.2 m; radius of

Card 1/2

VLADIMIRSKIY, V.V.; KOMAR, Ye.O.; MINTS, A.L.; GOL'DIN, L.L.;
MONOSZON, N.A.; RUBCHINSKIY, S.M.; TARASOV, Ye.K.; VASIL'YEV, A.A.;
VODOP'YANOV, F.A.; KOSHKAREV, D.G.; KURYSHEV, V.S.; MALYSHEV, I.F.;
STOLOV, A.M.; STREL'TSOV, N.S.; YAKOVLEV, B.M.

The 7 bev. proton synchrotron. Prib. i tekh. eksp. 7 no.4:5-9
Jl-Ag '62.   (MIRA 16:4)

1. Institut teoreticheskoy i eksperimental'noy fiziki Gosu-
darstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR,
Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury
Gosudarstyennogo komiteta po ispol'zovaniyu atomnoy energii
SSSR i Radiotekhnicheskiy institut Gosudarstvennogo komiteta
po ispol'zovaniyu atomnoy energii SSSR.
                              (Synchrotron)

S/120/62/000/004/007/047
E039/E420

The vacuum system of ...

gate valves which can be operated manually or by remote control.
A working pressure of about 2×10^{-6} mm is achieved. Detailed
diagrams of the layout of the system and the main components are
given. There are 7 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy
apparatury GKAE (Scientific Research Institute for
Electrophysical Apparatus GKAE)

SUBMITTED: April 6, 1962

Card 2/2

S/120/62/000/004/007/047
E039/E420

AUTHORS: Malyshev, I.F., Popkovich, A.V., Mikholis, Ya.L.,
             Martyugov, G.M., Artemov, A.D., Karpenko, N.M.

TITLE: The vacuum system of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 46-51

TEXT: The vacuum chamber of the synchrotron consists of
112 curved sections in the magnet gaps and 112 straight sections
situated between the magnet blocks.   The curved sections (except
for 11 sections containing accelerating electrodes, situated in
X-blocks) are constructed from corrugated tubes of 1х18Н9Т
(1Kh18N9T) steel; thickness 0.3 mm, convolutions 3 mm deep
and a pitch of 7 mm and of elliptical cross-section 114 and 84 mm
along axes.   On the straight sections are mounted the vacuum
manifolds and apparatus for observing the beam, e.g. measurement of
intensity and position of beam and also lost particles.   56 Oil
diffusion pumps type ВА-05 (VA-05) with semiconductor
refrigerators and liquid nitrogen traps are used to evacuate the
working space and there are 14 forevacuum pumps type ВН-1 (VN-1).
The vacuum chamber can be divided into 14 sections by means of
Card 1/2

The electrostatic accelerator ...   S/120/62/000/004/006/047
                                     E039/E420

fabric driven by a 3000 rpm 10 KW motor at 20 m/sec.   The
accelerating tube and its electrode system is described in detail:
it is 300 mm inner diameter with 44 segments and the residual
pressure is 2 to 5 x 10^{-6} mm Hg.   A Penning type discharge is
used in the ion source which provides 0.3 mA total ion current on
continuous operation or 20 mA pulsed;   the proton component being
10 to 12% and 65% respectively.   The energy of the injected
particles is stabilized to about 0.1%.   Results of operation in
1960-61 show that beam currents of 4 to 5 mA are obtained at 4 MV.
There are 10 figures and 1 table.

ASSOCIATIONS: Nauchno-issledovatel'skiy institut elektrofizicheskoy
              apparatury GKAE (Scientific Research Institute for
              Electrophysical Apparatus GKAE)
              Institut teoreticheskoy i eksperimental'noy fiziki
              GKAE (Institute of Theoretical and Experimental
              Physics GKAE)

SUBMITTED: April 6, 1962

Card 2/2

S/120/62/000/004/006/047
E039/E420

AUTHORS: Malyshev, I.F., Popkovich, A.V., Roshal', G.Ya.,
Zhelezhikov, F.G., Lysov, A.V., Tsepakin, S.G.,
Solnyshkov, A.I., Boytsov, A.S., Astakhov, Ye.Ya.,
Mironov, B.V., Lapitskiy, Yu.Ya., Batalin, V.A.,
Khoroshkov, V.S.

TITLE: The electrostatic accelerator - Injector of the proton
synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 37-45

TEXT: An electrostatic accelerator used as an injector in the
7.0 Gev proton synchrotron developed in 1956 by NIIEFA is
described. The pressure chamber is 2200 mm in diameter and
7400 mm high and is intended for working pressures of up to .
16 atm. Insulating gas is $N_2:CO_2$ mixture with a ratio of partial
pressure of 3:1. The main column is of conventional segmented
construction using polymethylmetacrylate. Values of the
dependence of the voltage produced on the gas pressure shows that
4 MV is obtained at 6.5 atm and 5.7 MV at 16 atm and a relative
humidity of $< 1\%$. The charge transporter belt is a six layer
Card 1/2

87455
S/057/60/030/012/002/011
B019/B056

Legend to Fig.4: 1) B_1 - B_4 are thyratron rectifiers. 2) $И_1$ - $И_{11}$ are ignitrons. 3) $Г_2$ and $Г_3$ are generators for degaussing and for the longitudinal field.

Card 4/4

87455

Technical Data and Main Parameters of
"Al'fa" Research Installation

S/057/60/030/012/002/011
B019/B056

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy
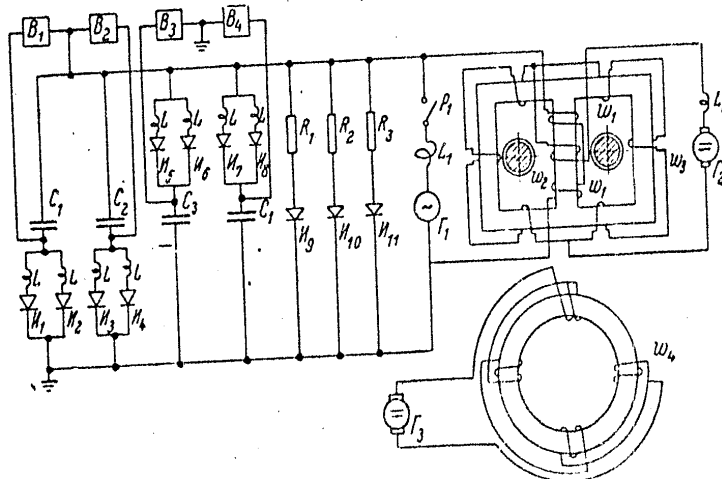apparatury (Scientific Research Institute of Electro-
physical Apparatus)

Fig.4

Card 3/4   Рис. 4. Блок-схема системы питания установки.

87455

Technical Data and Main Parameters of
"Al'fa" Research Installation

S/057/60/030/012/002/011
BO19/B056

Weight of the magnetic conductor: 110 t. Weight of the vacuum chamber:
4.5 t; total weight 156 t. The magnetic conductor is made of Э-42 (E-42)
transformer steel, the primary coil for the rotational field consists
of 25 turns of a copper tube having a diameter of 26 mm. The coil for
the longitudinal field consists of a copper tube with rectangular
cross section, constructed from 40 single coils having 12 turns each.
Current supply is discussed on the basis of the scheme shown in Fig.4.
For the pre-ionization in the interior of the chamber, a high-frequency
generator is used (4 mc). The outer chamber consists of 27 mm Al-sheets,
the inner chamber of 0.2 mm stainless steel, and at the bushings, it is
reinforced with 2 mm sheets. The vacuum system consists of 8 diffusion
units, two pre-vacuum pumps, and one booster pump. L. B. Dinaburg,
D. Ye. Zavarin, Ya. L. Mikhelis, B. I. Produvnov, B. V. Rozhdestvenskiy,
D. G. Sorokin, et al. took part in developing this research installa-
tion. There are 7 figures.

Card 2/4

87455

S/057/60/030/01 /002/01
B019/B056

26.2311

AUTHORS: Glukhikh, V. A., Komar, Ye. G., Larionov, B. A.,
Malyshev, I. F., Monoszon, N. A., Stolov, A. M., and
Strel'tsov, N. S.

TITLE: Technical Data and Main Parameters of "Al'fa" Research
Installation

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 12,
pp. 1394 - 1403

TEXT: The results obtained by calculation were checked during planning
of this research installation on a model having the scale 1/20. The fol-
lowing essential data were given: Mean diameter of the torus: 3200 mm,
diameter of the cross section: 1000 mm. Margin of energy of the capaci-
tor battery: 1500 kilojoules. Field strength of the rotational field:
0.2-8 v/cm. Maximum field strength of the magnetic longitudinal field:
1500 oe. Maximum discharge current: 300 ka. Leakage intensity of the
six turns of the primary coil: $1.6 \cdot 10^{-5}$ henries. Maximum induction of
the magnetic conductor with a discharge current of 300 ka: 12,000 Gauss.

Card 1/4

MALYSHEV, E.F.

26 27/1

57.2

5/057/60/010/012/001/011
BC19/B056

AUTHORS: Afrosimov, V. V., Gladkikh, V. A., Golant, V. Ye.,
Zaydel', L. I., Komar, Ye. G., Konstantinov, B. P.,
Malyshev, G. M., Malyshev, I. F., Monoszon, N. A.,
Stolov, A. M., Fedorenko, N. V.

TITLE: Plasma Studies With "Alfa" Research Installation

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 12,
pp. 1381 - 1393

TEXT: A research installation for producing high-power pulsed dis-
charges in a toroidal chamber with an average diameter of 3.2 m and an
inner cross-section diameter of 1 m is described. The chamber is filled
with hydrogen, and discharge is obtained at a pressure of about
$2 \cdot 10^{-4}$ mm Hg, and with an external magnetic field of 180-720 oe. Dis-
charges are produced by 2-3 msec electric pulses coming from a capacitor
battery capable of storing $1.5 \cdot 10^6$ joules of energy. The entire install-
ation is shown in a photograph, and is schematically represented in Fig. 2.

Card 1

The electric and magnetic characteristics of a plasma discharge are de-
scribed in detail, after which microwave studies, spectrum analyses,
and studies of the atomic flux emitted by the plasma are discussed. The
experiments hitherto carried out on "Alfa" show that the production
and character of a discharge do not correspond to the general concep-
tions of a self-contracting quasi-steady discharge. The authors found
this opinion owing to the lack of a stable plasma column, which follows
from measurements of the electric and magnetic characteristics, from
microwave studies, from the existence of a large azimuthal current,
from the necessity of discharges, from the occurrence of oscillations
therein, and from a considerable inhomogeneity of plasma. Besides, there
is an inhomogeneous hydrogen-ion distribution which is indicated by a
large quantity of protons with energies exceeding 10 kev. An explanation
of these effects is not possible as yet. There are 8 figures and 22 ref-
erences: 13 Soviet, 3 Swedish, and 5 US.

Card 2

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Institute of
Physics and Technology of the AS USSR), Nauchno-
issledovatel'skiy institut elektrofizicheskoy apparatury
(Scientific Research Institute of Electrophysical
Apparatus)

SUBMITTED: July 15, 1960

Card 3/3

A 1.20-Meter Cyclotron With a Magnetic Pole Diameter   SOV/89-7-2-8/24

L. N. Fedulov, V. V. Romanov and K. A. Asriyev , Ye. G. Komar
gave valuable advice. F. K. Arkhangel'skiy aided the testing
of the first cyclotron. Problems concerning the planning of
the cyclotron were discussed with D. G. Alkhazov. There are
10 figures and 5 Soviet references.

SUBMITTED: March 12, 1959

Card 4/4

A 1.20-Meter Cyclotron With a Magnetic Pole Diameter   _ SQV/89-7-2-8/24

Basargin. The magnetic quadrupole lenses of N. A. Ostrovskiy and N. I. Konovalova were used in this system. The cyclotron produces 13.7 mev of deuterons while the extreme route of the particle flux can be up to 1 ma. There is a guided beam of 100-200μa at disposal for normal work and the beam is focussed to a plane of 15.20 mm². The control desk, signal equipment and the special electrical installations were designed by V. S. Lyublin, N. B. Nevrov, P. S. Gornikel' working under the guidance of G. S. Gordeychik. Similar cyclotrons, constructed in the USSR, are in operation in Romania, China, Poland and GDR. In the near future a cyclotron of a similar type will be completed in the CSR. The first cyclotron of this type was tested in 1956 by L. N. Baulin, R. N. Letunovskiy, Yu. G. Basargin, A. V. Stepanov, G. A. Nalivayko, M. D. Veselov, V. A. Suslov and A. I. Antonov from the Scientific Research Institute for Electrophysical Apparatus and I. I. Afanas'yev, A. A. Arzumanov and R. A. Meshcherov from the Institute for Atomic Energy of the AS USSR. The magnetic quadrupole lenses were tested at the cyclotron of the AN USSR (AS UkrSSR) with the participation of V. A. Kovtun. The fabrication of the cyclotron was supervised by A. V. Nozalevskiy,

Card 3/4

A 1.20-Meter Cyclotron With a Magnetic Pole Diameter   SOV/89-7-2-8/24

in the center of the field. The position of the magnetic
plane was determined by the magnetic scale developed by V. V.
Pirogovskiy. For the correction of the magnetic field inside
rings and discs were used, which are installed between the
poles of the magnet and the lids of the vacuum chambers (sec-
tional views are given). The measurements, the construction
method and the assembly of the resonance conductor and of the
duants are described in detail (there are sectional views). The
acceleration chamber and the resonance conductor (there is a
detailed sketch) were constructed by A. I. Alyab'yev, I. F.
Zhukov, N. N. Rumyantsev under the supervision of B. I. Pro-
duvnov. The whole high-frequency installation is shown in a
block diagram and there is a short description of part of it.
The high-frequency section was developed by G. M. Drabkin,
R. V. Vanatovskiy and R. Yu. Protasovskiy under the super-
vision of A. S. Temkin. The vacuum systems were computed by
Ya. L. Mikhelis and N. M. Karpenko. The movement of ions
in the ion source and in the central part of the cyclotron
is of special importance at the acceleration. This movement
was thoroughly studied by I. M.Matora. He developed a special

Card 2/4   deflector system. The focusing system was computed by Yu. G.

SOV/89-7-2-8/24

21(9)
AUTHORS: Alekseyev, A. G., Gashev, M. A., Dondysh, L. L., Malyshev, I. F., Matora, I. M., Mironov, Ye. S., Monoszon, N. A., Nemenov, L. M., Pirogovskiy, V. V., Romanov, N. A., Strel'tsov, N. S., Fedorov, N. D.

TITLE: A 1.20-Meter Cyclotron With a Magnetic Pole Diameter (Tsiklotron s diametrom polyusov magnita 120 cm)

ABSTRACT: The device was developed in the Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury (Scientific Research Institute for Electro-physical Apparatus) in collaboration with the Institut atomnoy energii AN SSSR (Institute for Atomic Energy of the AS USSR). The electro-magnet was designed by N. N. Indyukov, Ye. A. Bezgachev, A. V. Klimov under the guidance of B. V. Rozhdestvenskiy and B. Ye. Gritskov (Figs 1 and 2 are cross sections of the electro-magnet). The radial field force was measured in such a way that the error in the center of the field was less than 0.01% of the force of the field. The error at the measurement of the azimuthal inhomogeneity of the field was less than 0.007% of the field force

Card 1/4

8

MALYSHEV, I.F.

9(31k)

PHASE I BOOK EXPLOITATION   SOV/2746

Akademiya nauk USSR. Fiziko-tekhnicheskiy institut

Elektrostaticheskiye generatory; sbornik statey (Electrostatic Generators;
Collection of Articles) Moscow, Atomizdat, 1959. 255 p. 4,100 copies
printed.

Ed. (Title page): A. K. Val'ter, Member, Academy of Sciences, USSR; Ed. (inside
book): Z. D. Andreyenko; Tech. Ed.: M. A. Vlasova.

PURPOSE: This collection of articles may be useful to scientists and engineers
working with high-voltage electrostatic generators.

COVERAGE: The authors discuss the construction and operation of a number of
electrostatic generators developed in the USSR and describe methods of gener-
ating negative hydrogen ions. They discuss the operation of accelerating
tubes and present methods of stabilizing accelerator voltages. No perso-
nalities are mentioned. References appear at the end of some articles.

Koval, A. G., L. I. Krupnik, A. D. Timofeyev and Ya. M. Fogel. Problems
of Producing a Beam of Negative Hydrogen Ions by Overcharging Positive
Ions in a Cathode Channel of a High-frequency Source   15
The authors discuss a negative hydrogen-ion source based on the pro-
duction of a negative ion beam by overcharging positive ions in a gas
flowing through a cathode channel of a high-frequency source. They
also derive expressions for determining amount of negative hydrogen ions
in that beam. There are 11 references: 6 Soviet, 4 English and 1
German.

Val'ter, A. K., A. Ya. Taranov, L. I. Pivovar, Ya. M. Fogel, V. D.
Palmumk and S. F. Taylko. 5-Mev Horizontal Overcharging Electrostatic
Generator   193
The authors discuss the principle of operation and construction of
a PG-5 type electrostatic generator and describe methods of ion
acceleration and overcharging. They also explain the operation of
an ion-beam focusing system and briefly discuss the stabilization
and measurement of generator voltages. There are 4 references: 3
Soviet and 1 English.

Val'ter, A. K., and A. A. Tyupalo. Experience Acquired in the Design,
Testing and Operation of a 4-Mev Vertical Electrostatic Accelerator De-
veloped by FTI AN Ukr-SSR   300
The authors discuss the construction and requirements of a 4-Mev
vertical electrostatic accelerator developed by FTI AN Ukr-SSR and
present the results of a study of insulating materials for the ac-
celerator and the accelerating tube. They also discuss the results of
testing of the accelerator and its components and present current and
voltage characteristics. There are 10 references: 5 Soviet, 3 English
and 1 French.

Malyshev, I. F., P. O. Zhirkov and G. Ya. Pesal'. Experience Ac-
quired in the Development of Industrial Types of Electrostatic Generators
The authors discuss the construction and operation of a EG-1.5 million-
volt electrostatic generator and its components and present the results
of testing. They also briefly describe the operation of a EG-1.5 type
1.5 million volt electrostatic generator and its components (radiation) and 5
There are 9 references: Soviet (irradiation) and 5
English.

AVAILABLE: Library of Congress

ARKHANGEL'SKIY, F.K.; GASHEV, M.A.; KOMAR, Ye.G.; MALYSHEV, I.F.;
MONOSZON, N.A.; STOLOV, A.M.; STREL'TSOV, N.S.

Electric engineering and design problems in constructing large
cyclic accelerators. Elektrichestvo no.11:25-34 N '57.
(MIRA 10:10)

(Cyclotron)

JEFREMOV, D.V.; MESCERJAKOV, M.G.; MINC, A.L.; DZELEPOV, V.P.; IVANOV, P.P.;
KAMYSEV, V.S.; KOMAR, J.G.; MALYSEV, I.F.; MONOSZON, N.A.; NEVJAZSKIJ,
I.Ch.; POLJAKOV, B.I.; CESTNOJ, A.V.; BENDA, Frantisek [translator]

The six meter synchrocyclotron of the Institute for Research on
Nuclear Problems affiliated to the Academy of Sciences of Soviet
Union. Jaderna energie 3 no.1:1-4 Ja '57.

1. Ustav jaderne fysiky (for Benda).